# SPECTRUM MANAGEMENT IN THE GLOBAL VILLAGE

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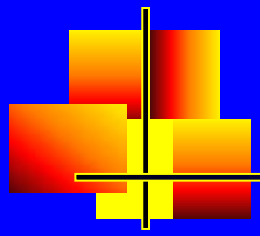
# TOPICS FOR DISCUSSION

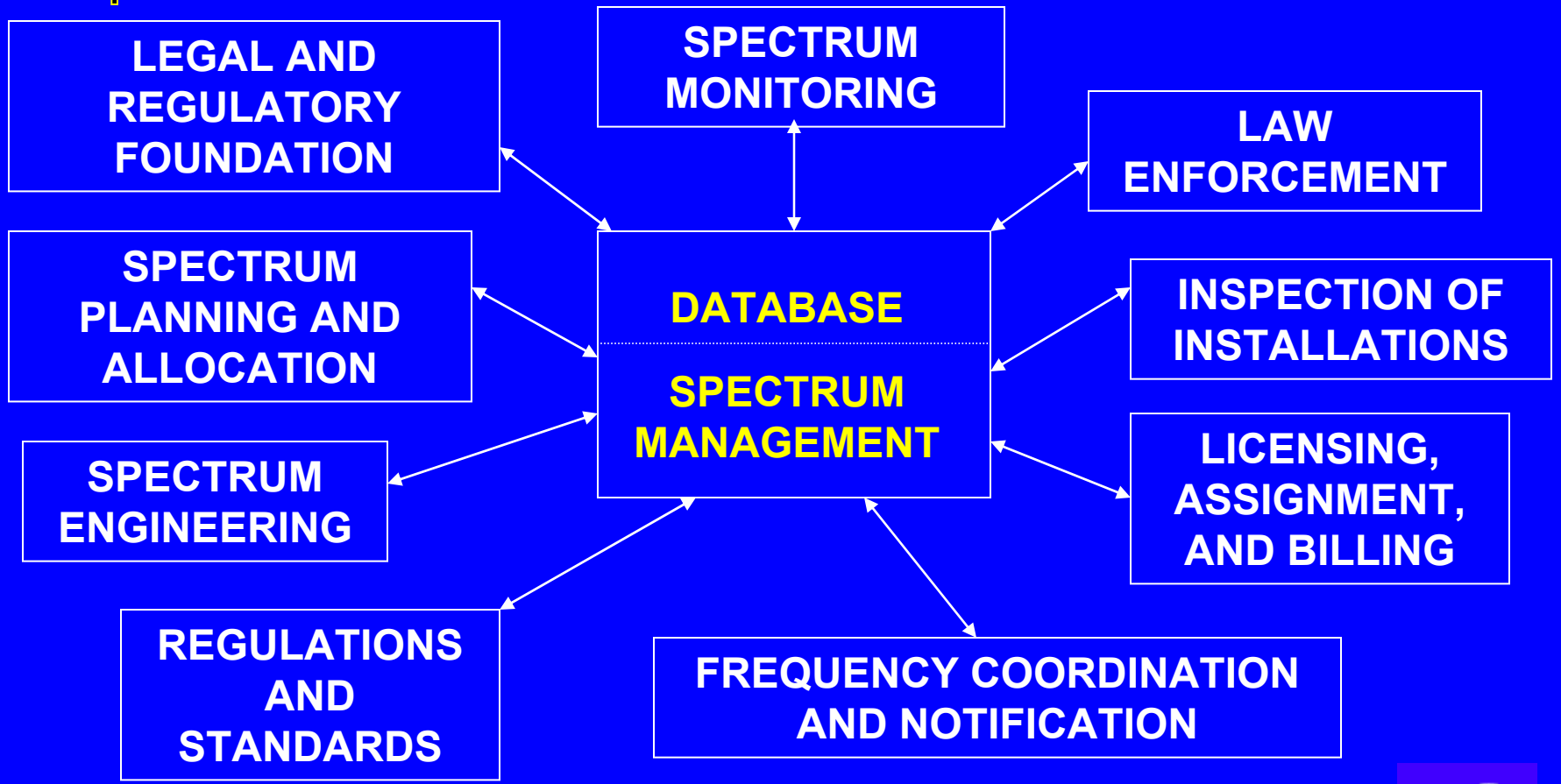
- PRINCIPLES OF SPECTRUM MANAGEMENT
- WHAT IS SPECTRUM MANAGEMENT?
- HOTTEST TOPICS
- NATIONAL SPECTRUM MANAGEMENT HANDBOOK
- BEST PRACTICES
- SPECTRUM REFORM
- CONCLUSIONS

# PRINCIPLES OF SPECTRUM MANAGEMENT

1. COMPETITION
2. MAXIMUM FLEXIBILITY
3. PUBLIC INTEREST
4. CONSTRUCTIVE LICENSING AND FEE POLICIES
5. ADMINISTRATIVE CERTAINTY WITH MINIMUM DELAY
6. NATIONAL DECISIONS IN A GLOBAL MARKET CONTEXT

# WHAT IS SPECTRUM MANAGEMENT?





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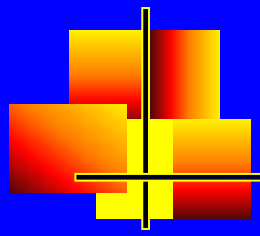

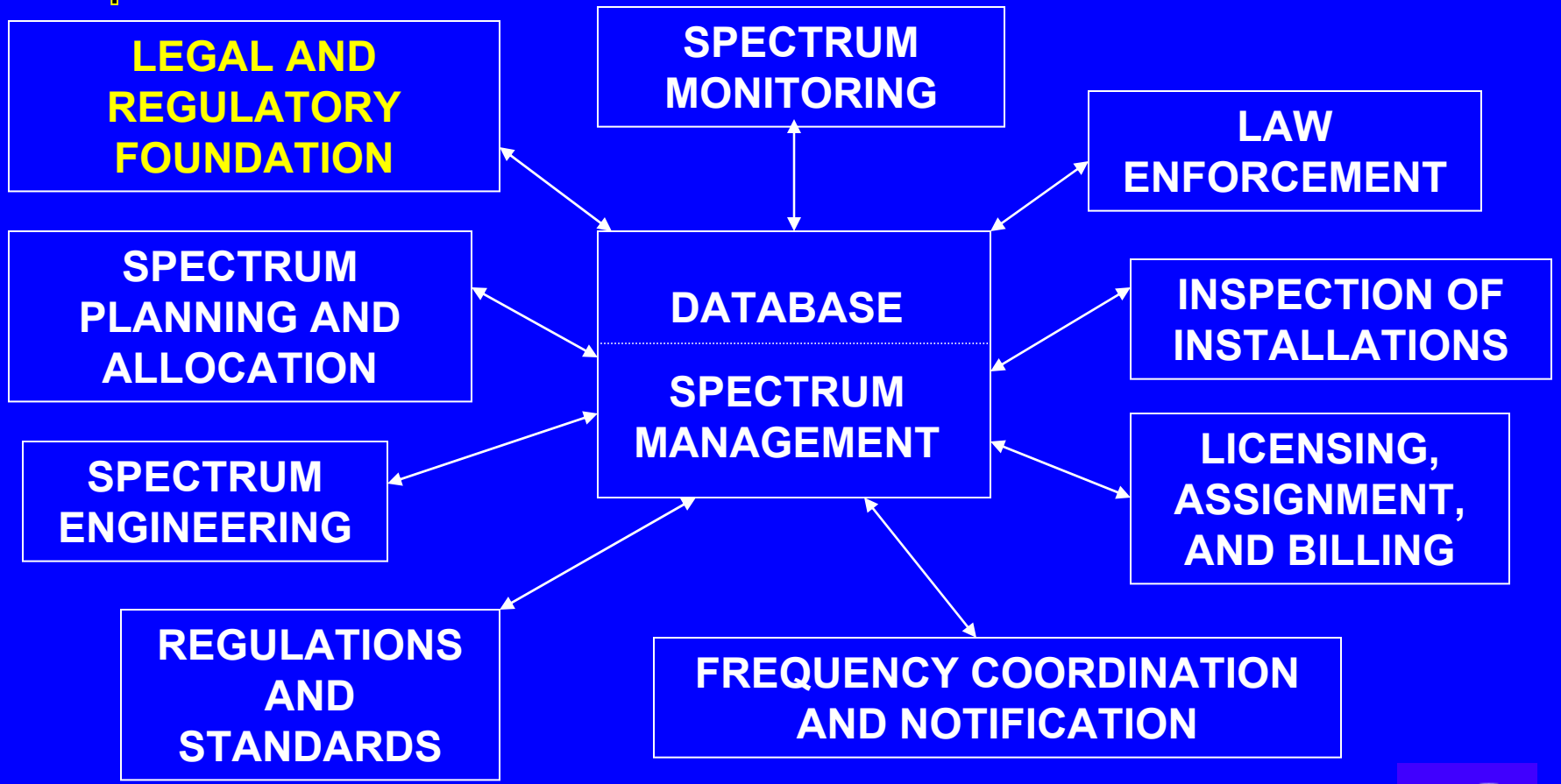

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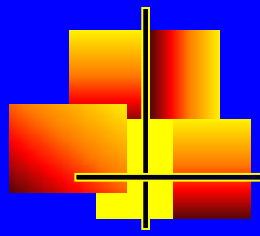

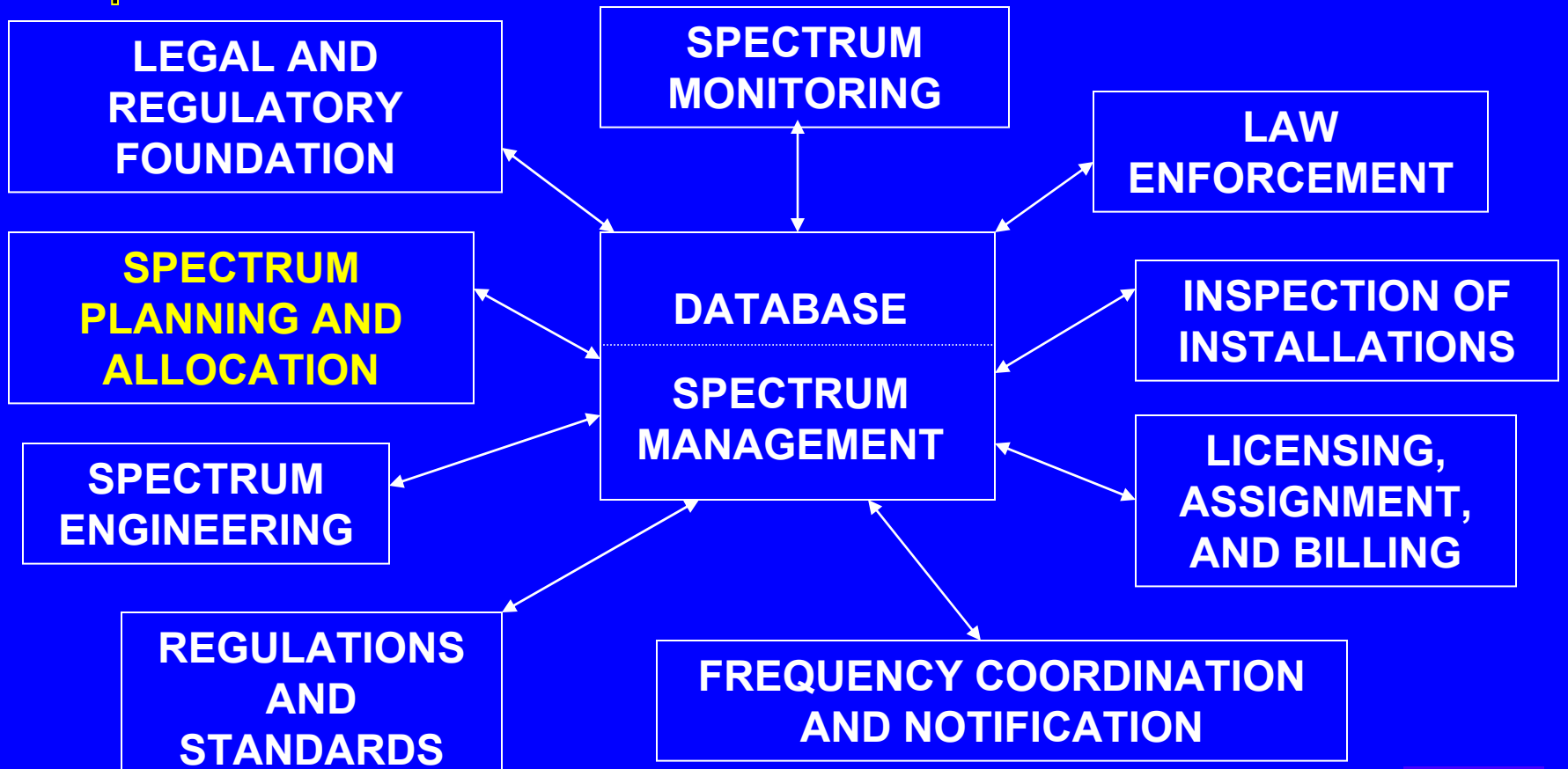

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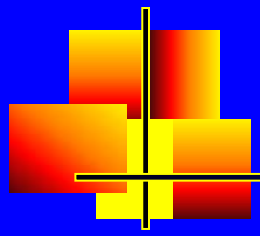

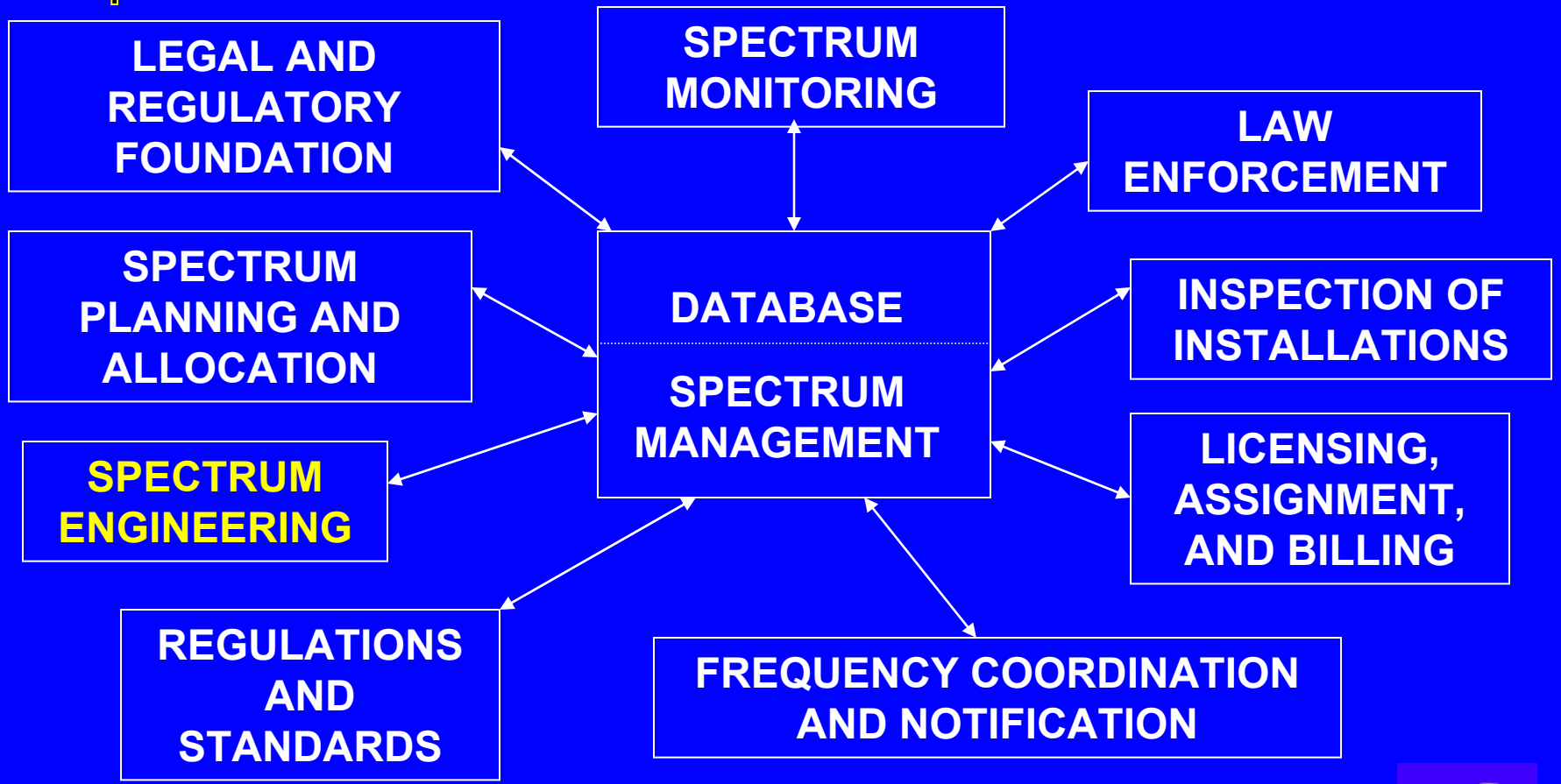

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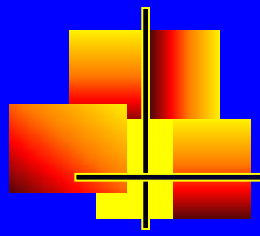

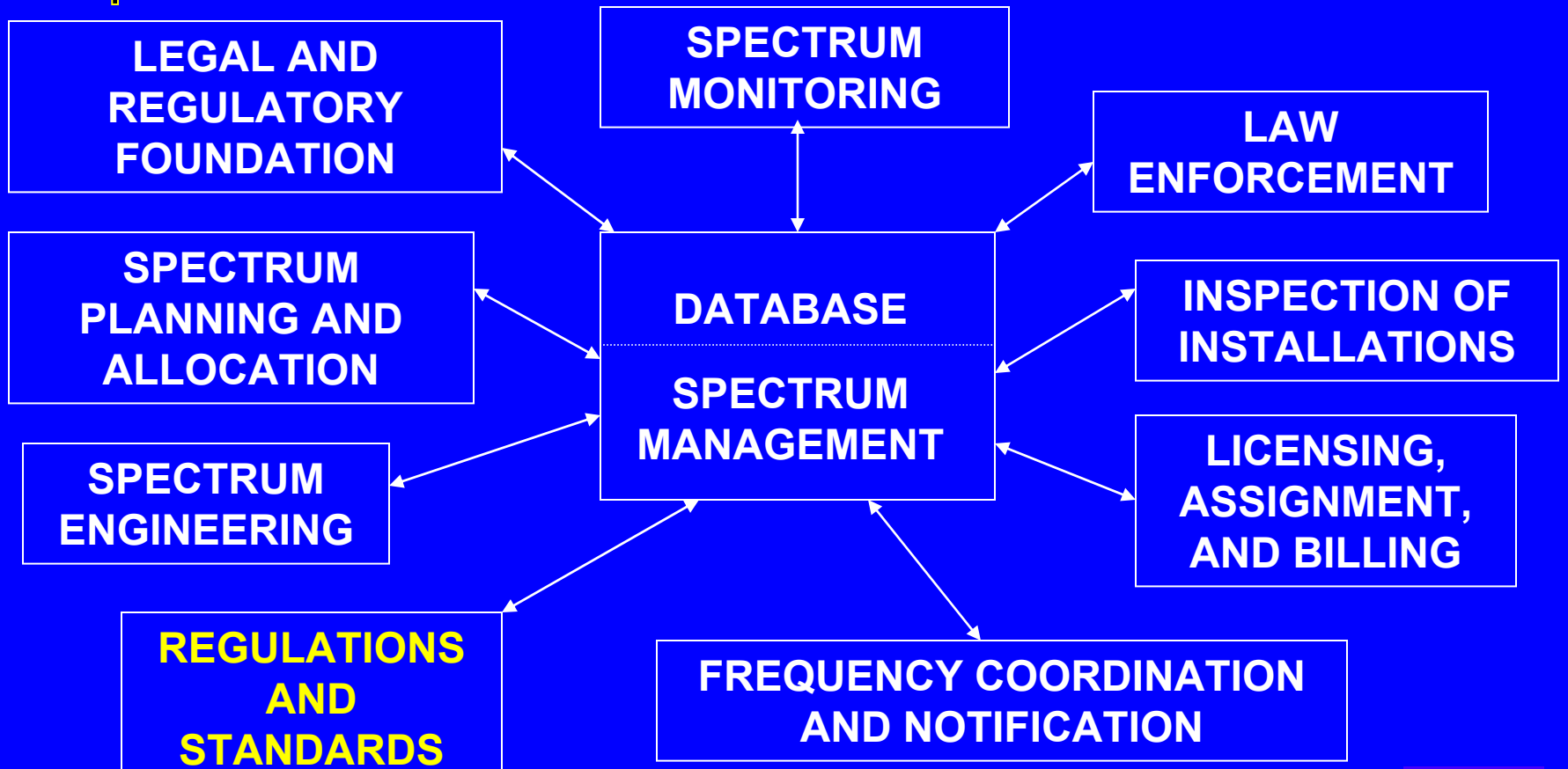

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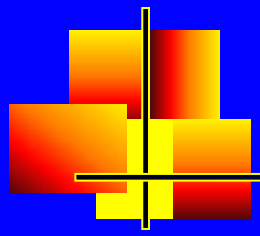

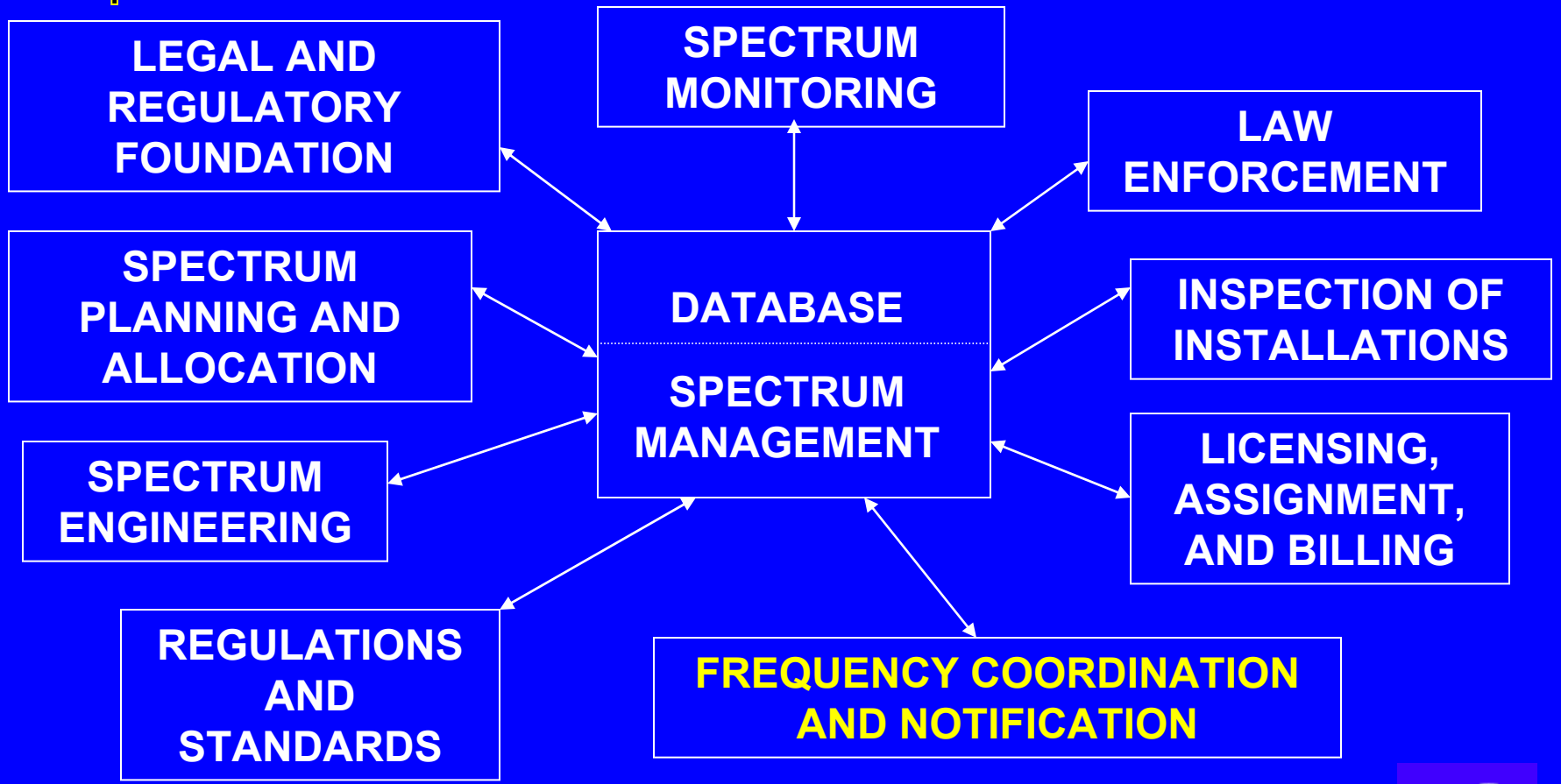

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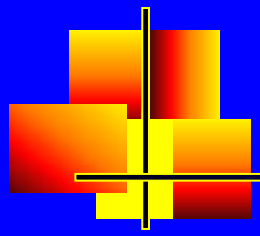

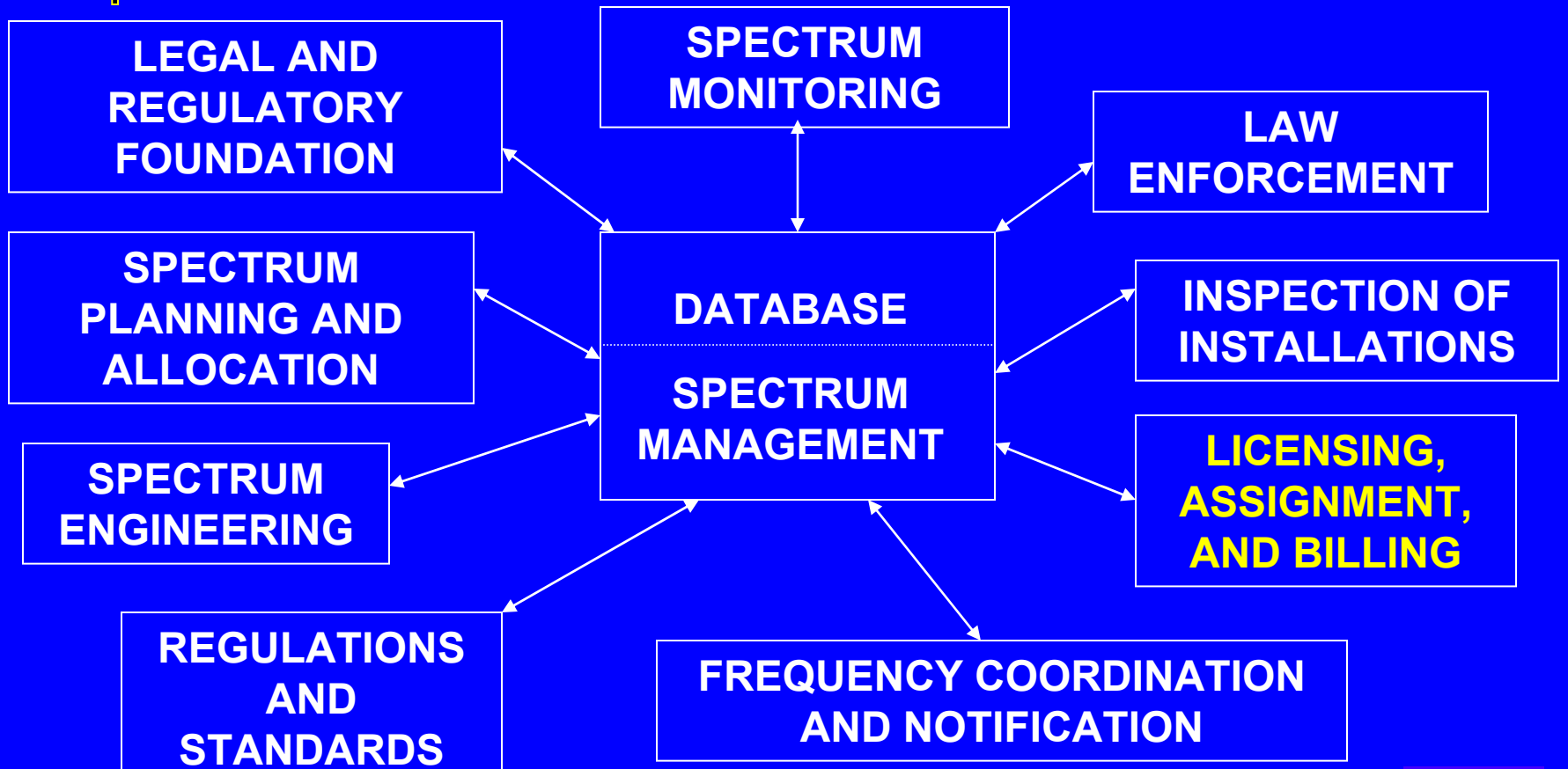

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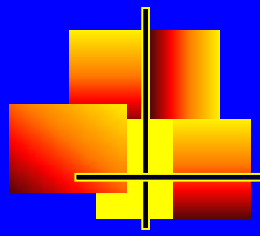

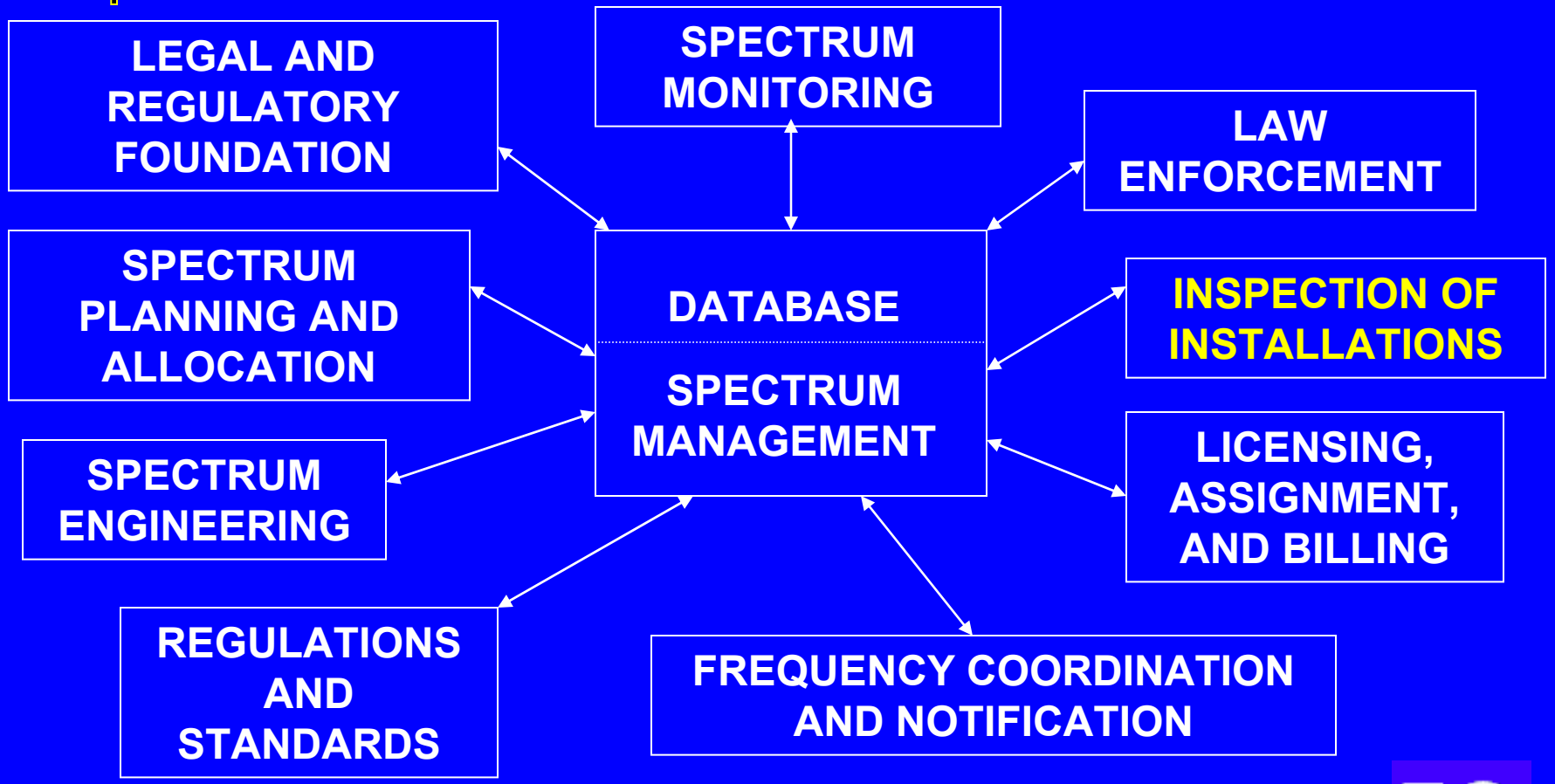

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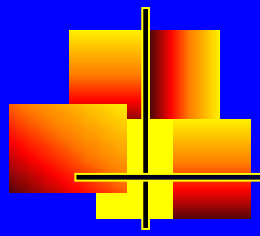

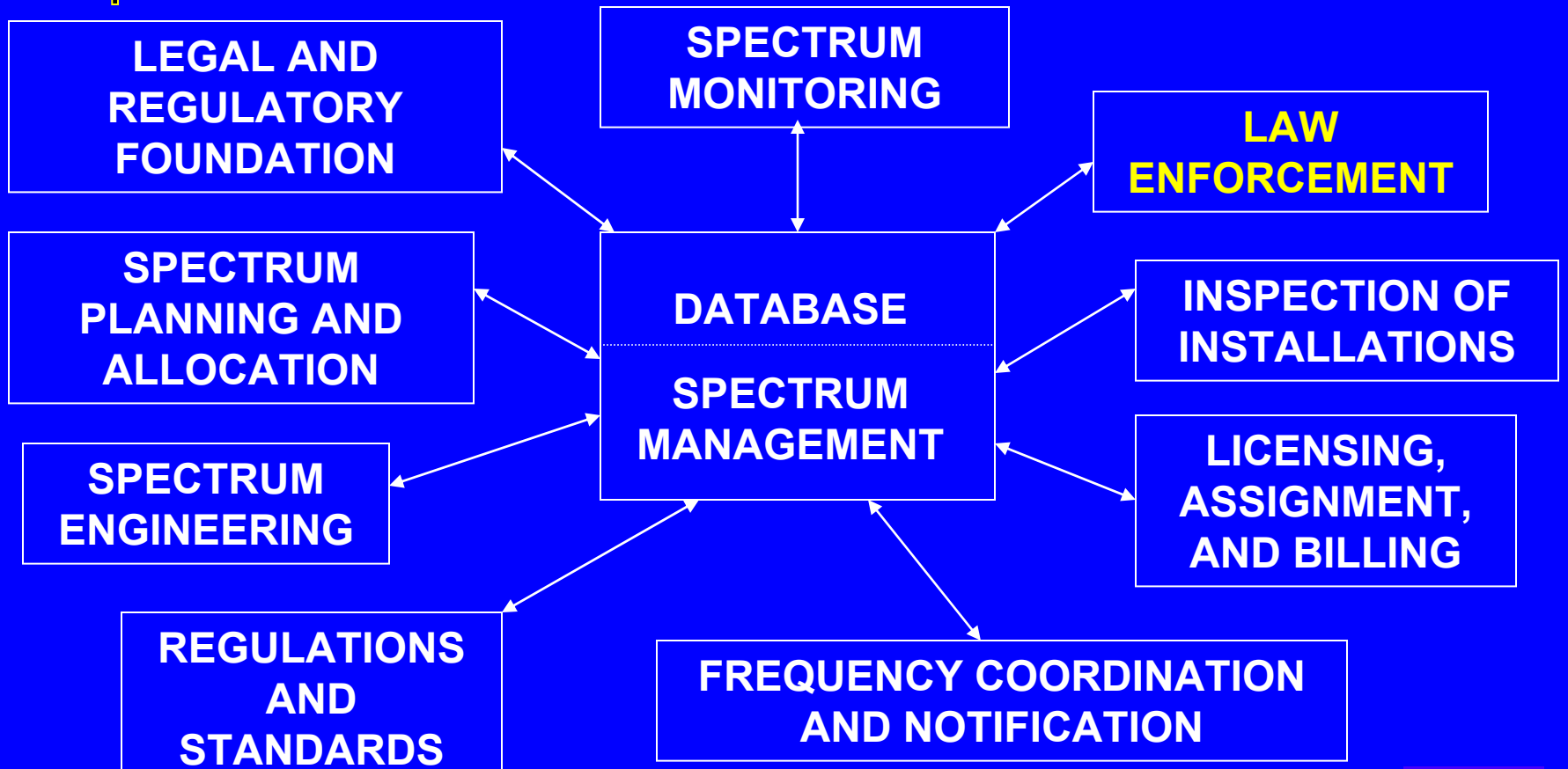

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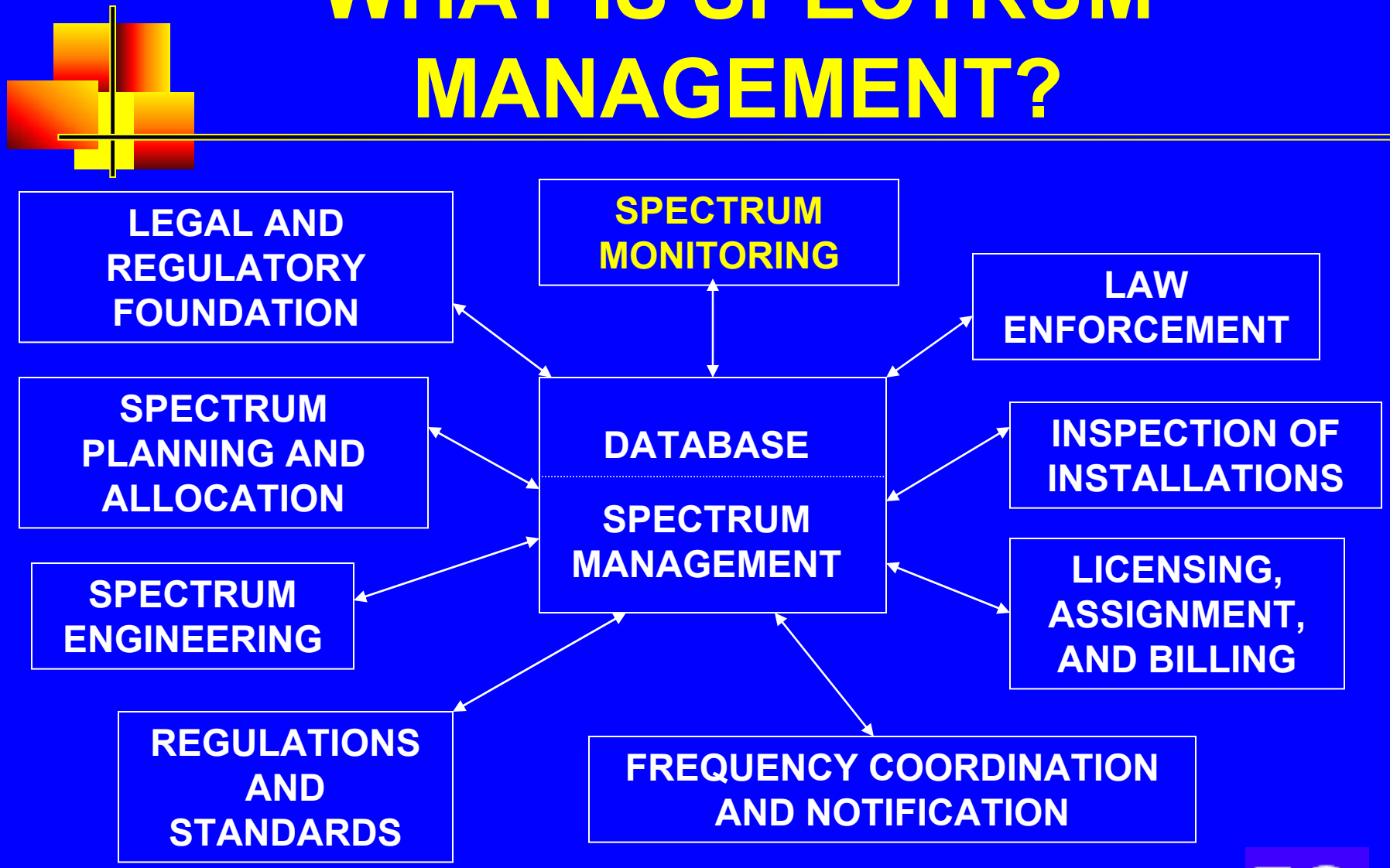


# HOW DO WE ACHIEVE SPECTRUM MANAGEMENT?

- WORLD AND REGIONAL RADIO CONFERENCES
- GLOBAL RECOMMENDATIONS
  - TECHNICAL CHARACTERISTICS
  - OPERATIONAL PROCEDURES
- ELIMINATING HARMFUL INTERFERENCE
- MASTER INTERNATIONAL FREQUENCY REGISTER
- PROVIDE TOOLS, INFORMATION, AND SYMPOSIA

# HOTTEST TOPICS

- SPECTRUM ECONOMICS
- BROADBAND
- SOFTWARE-DEFINED RADIOS
- TERRESTRIAL SHARING WITH GEOSTATIONARY SATELLITE NETWORKS
- ULTRA-WIDEBAND

# SPECTRUM ECONOMICS

- APPLIES TO ALL TERRESTRIAL, AND NATIONAL SATELLITE SPECTRUM/ORBITS
- BEING STUDIED, APPLIED, AND MODIFIED IN MANY COUNTRIES
- ONE-TIME APPLICATION OR INSPECTION FEES, PERIODIC REGULATORY FEES, PERIODIC AUCTIONS, SECONDARY MARKETS

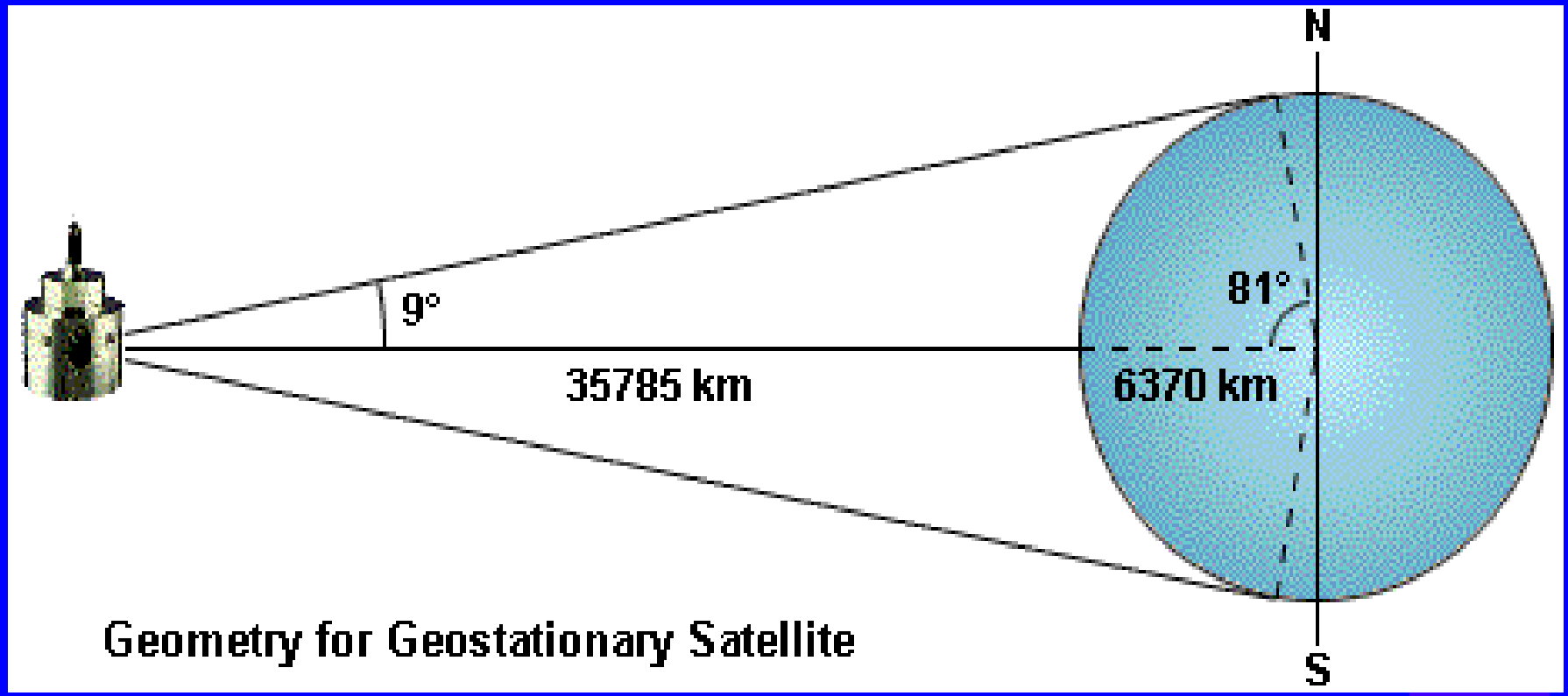
# BROADBAND

- LARGELY DRIVEN BY THE INTERNET
- ALSO DRIVEN BY CONVERGENCE OF VOICE, VIDEO, AND DATA
- COMPETITION AMONG SATELLITE DELIVERY, WIRED TELEVISION (CABLE OR FIBRE), WIRED TELEPHONE (DSL), AND ACCESS OVER POWER MAINS

# SOFTWARE-DEFINED RADIOS

- COMPUTER-DRIVEN RADIOS USING SOFTWARE RATHER THAN HARDWARE TO CHANGE FREQUENCY, MODULATION, AND POWER LEVELS
- WILL ALLOW MORE EFFICIENT USE OF SPECTRUM
- WILL ASSIST INTEROPERABILITY, PARTICULARLY FOR PUBLIC SAFETY, AND BETWEEN NATIONAL AND LOCAL OFFICIALS

# TERRESTRIAL SHARING WITH GEOSTATIONARY SATELLITE NETWORKS



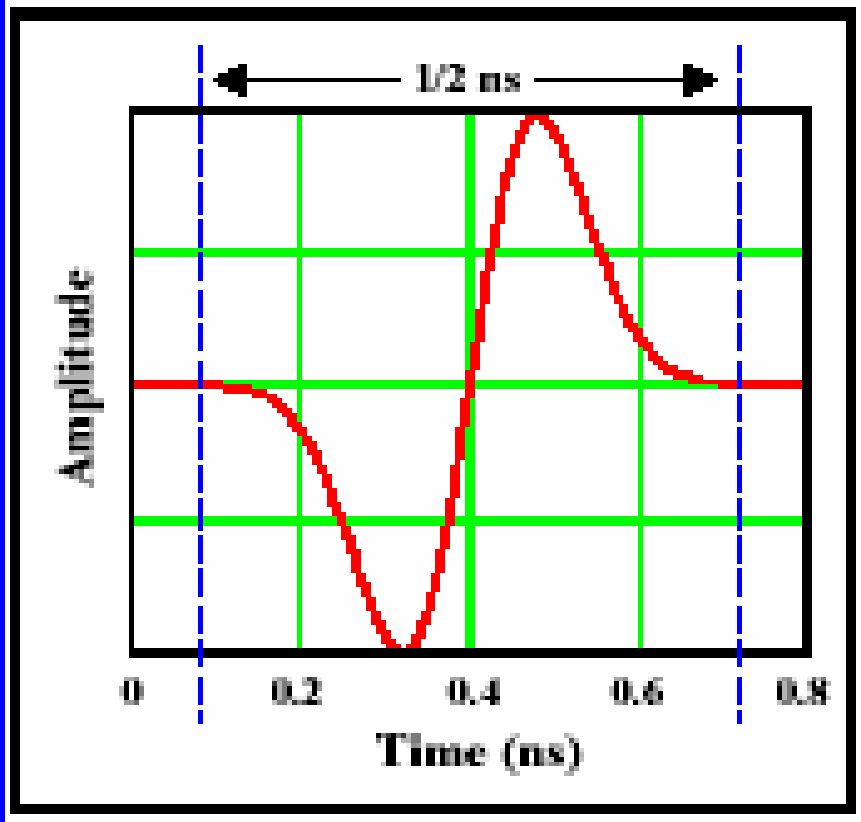

Geometry for Geostationary Satellite

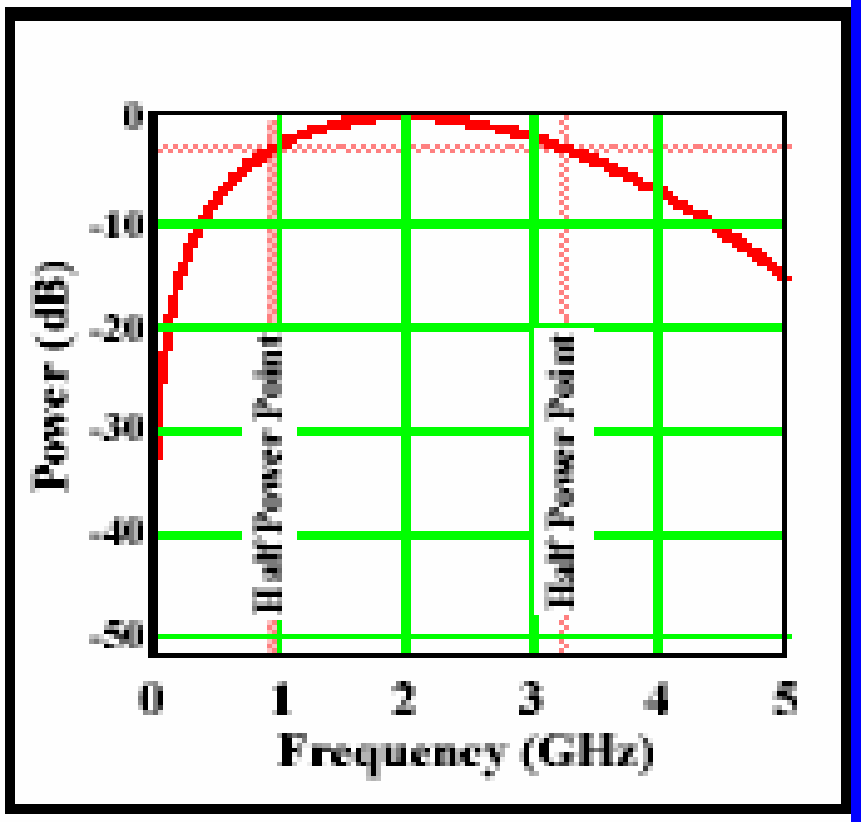
# ULTRA-WIDEBAND

## UWB SIGNAL DEFINITION:

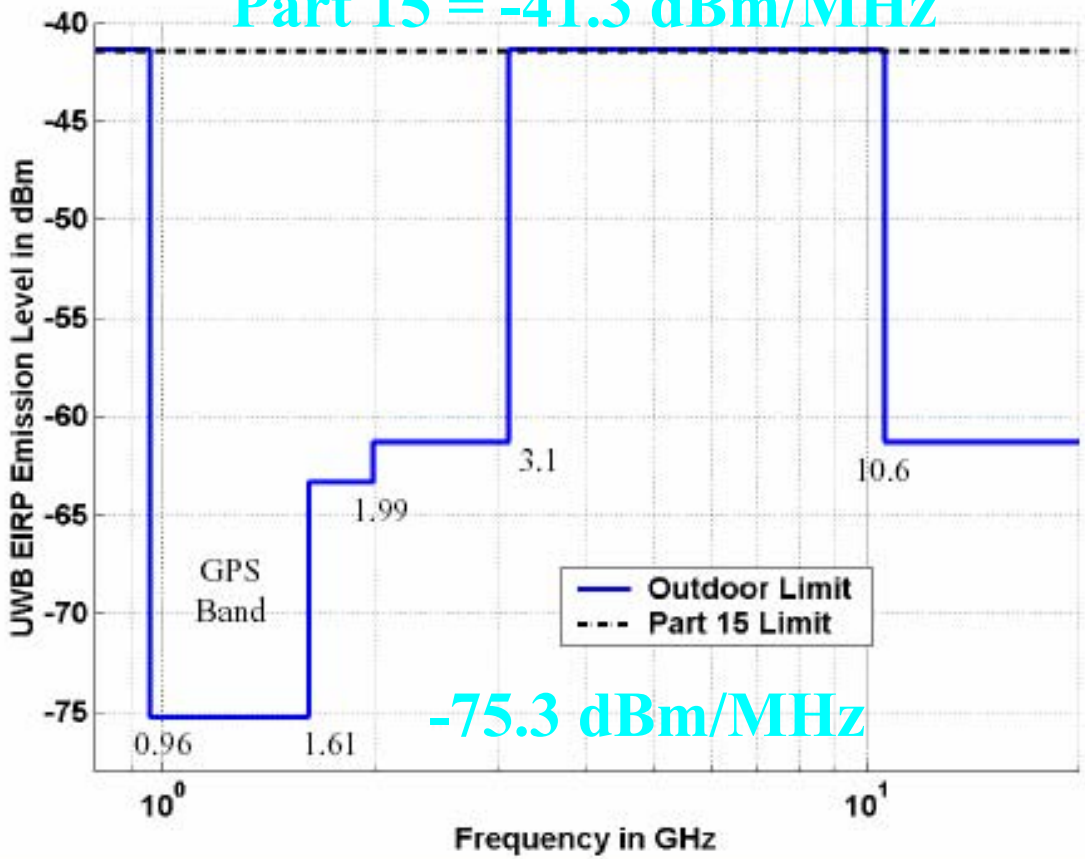
- THE FRACTIONAL BANDWIDTH IS GREATER THAN 20% OF THE CENTER FREQUENCY, OR
- THE -10 DB BANDWIDTH OCCUPIES 500 MHz OR MORE OF SPECTRUM

# UWB MONOCYCLE TIME AND FREQUENCY DOMAINS



# UWB Emission Limits




**UWB Emission Limit for Outdoor Systems**

Equipment must be hand-held.

**U.S. LIMITS**

# NATIONAL SPECTRUM MANAGEMENT HANDBOOK

- SPECTRUM MANAGEMENT FUNDAMENTALS
- SPECTRUM PLANNING
- FREQUENCY ASSIGNMENT AND LICENSING
- SPECTRUM MONITORING, SPECTRUM INSPECTION AND INVESTIGATION
- SPECTRUM ENGINEERING TECHNIQUES
- SPECTRUM ECONOMICS
- AUTOMATION FOR SPECTRUM MANAGEMENT ACTIVITIES
- SPECTRUM EFFICIENCY
- SPECTRUM MANAGEMENT INFORMATION ON THE ITU WEBSITE
- SPECTRUM MANAGEMENT TRAINING
- SPECTRUM BEST PRACTICES

# SPECTRUM POLICY REFORM

## FCC SPECTRUM POLICY TASK FORCE CONCLUSIONS:

- SPECTRUM ACCESS IS A MORE SIGNIFICANT PROBLEM THAN SPECTRUM SCARCITY
- TECHNOLOGY IS ALLOWING SYSTEMS TO BE MORE TOLERANT TO INTERFERENCE

# SPECTRUM POLICY REFORM

## FCC SPECTRUM POLICY TASK FORCE RECOMMENDATIONS:

- MIGRATE TO MORE MARKET-ORIENTED MODELS
- GIVE MORE EMPHASIS TO TIME SHARING
- ALLOW UNLICENSED SERVICES IN COMMON BANDS
- PERMIT LOW-POWER USERS HAVING SMART RADIOS TO OPERATE JUST ABOVE THE AMBIENT NOISE BUT BELOW LEVELS OF SIGNALS NEEDED BY OTHERS

# CONCLUSIONS

SPECTRUM MANAGEMENT MUST BE APPROACHED ON A GLOBAL BASIS USING COMMON STANDARDS, COMMON PROCESSES, AND COMMON FREQUENCY ALLOCATIONS, SO AS TO REACH EVERY VILLAGE.

ALTHOUGH WE ARE DIFFERENT TRIBES AND DIFFERENT TONGUES, WE ARE THE SAME PEOPLE.

LET US NOT FORGET THAT TELECOMMUNICATIONS TIE US TO THE PAST, CONNECT US IN THE PRESENT, AND LINK US FOR THE FUTURE.